In re Patent Application of:
CAIN
Serial No. **10/043,457**
Filing Date: **JANUARY 10, 2002**
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In the Claims:

1. (Currently Amended) A wireless communication network comprising:

a plurality of mobile nodes each comprising a transceiver, a phased array antenna connected to said transceiver, and a controller connected to said transceiver for

scheduling a respective semi-permanent time slot for each time frame to establish a communication link with each neighboring mobile node, ~~node and leaving at least one available time slot in each time frame,~~ each time frame having up to N semi-permanent time slots and at least 2N-1 available time slots,

scheduling the at least one available time slot to also serve the communication link with a neighboring mobile node based upon link communications demand, and

aiming said phased array antenna toward each neighboring mobile node during communication therewith.

2. (Original) A wireless communication network according to Claim 1, wherein said controller prioritizes the communication links and drops one of the communication links based upon the prioritization for making available a semi-permanent time slot for establishing a communication link with a new neighboring mobile node.

3. (Original) A wireless communication network

according to Claim 1, wherein said controller prioritizes the communication links and schedules the at least one available time slot based upon the prioritization.

4. (Original) A wireless communication network according to Claim 1, wherein said controller schedules one of the semi-permanent time slots as an available time slot if a number of the communication links is less than N.

5. (Original) A wireless communication network according to Claim 4, wherein said controller reschedules the demand assigned time slot back to a semi-permanent time slot if the number of the communication links is to be equal to N.

6. (Original) A wireless communication network according to Claim 1, wherein each communication link is formed by an initiating mobile node and a receiving mobile node, and wherein said initiating mobile node transmits a list of available semi-permanent time slots to said receiving mobile node.

7. (Original) A wireless communication network according to Claim 6, wherein said receiving mobile node transmits selection of one of the semi-permanent time slots to said initiating mobile node.

8. (Original) A wireless communication network according to Claim 7, wherein said initiating mobile node confirms selection of the selected semi-permanent time slot to said receiving mobile node.

9. (Original) A wireless communication network according to Claim 1, wherein each mobile node further comprises an omni-directional antenna connected to said transceiver for exchanging positional information with other neighboring mobile nodes.

10. (Original) A wireless communication network according to Claim 1, wherein each mobile node comprises a plurality of transceivers so that said phased array antenna simultaneously generates multiple antenna beams; and wherein said controller aims said phased array antenna to multiple neighboring mobile nodes within a scheduled semi-permanent time slot.

11. (Original) A wireless communication network according to Claim 10, wherein the multiple antenna beams are generated on different frequencies.

12. (Original) A wireless communication network according to Claim 1, wherein a plurality of communication links are established within a scheduled semi-permanent time slot, with each communication link including a different pair of neighboring mobile nodes.

13. (Original) A wireless communication network comprising:

a plurality of mobile nodes each comprising a transceiver, a directional antenna connected to said transceiver, and a controller connected to said transceiver

for

scheduling a respective semi-permanent time slot for each time frame to establish a communication link with each neighboring mobile node and leaving at least one available time slot in each time frame,

scheduling the at least one available time slot to also serve the communication link with a neighboring mobile node based upon link communications demand, and

aiming said directional antenna toward each neighboring mobile node during communication therewith.

14. (Original) A wireless communication network according to Claim 13, wherein each time frame has up to N semi-permanent time slots and at least 2N-1 available time slots.

15. (Original) A wireless communication network according to Claim 13, wherein said controller prioritizes the communication links and drops one of the communication links based upon the prioritization for making available a semi-permanent time slot for establishing a communication link with a new neighboring mobile node.

16. (Original) A wireless communication network according to Claim 13, wherein said controller prioritizes the communication links and schedules the at least one available time slot based upon the prioritization.

17. (Original) A wireless communication network according to Claim 13, wherein said controller schedules one of the semi-permanent time slots as an available time slot if a number of the communication links is less than N.

18. (Original) A wireless communication network according to Claim 17, wherein said controller reschedules the demand assigned time slot back to a semi-permanent time slot if the number of the communication links is to be equal to N.

19. (Original) A wireless communication network according to Claim 13, wherein each communication link is formed by an initiating mobile node and a receiving mobile node, and wherein said initiating mobile node transmits a list of available semi-permanent time slots to said receiving mobile node.

20. (Original) A wireless communication network according to Claim 19, wherein said receiving mobile node transmits selection of one of the semi-permanent time slots to said initiating mobile node.

21. (Original) A wireless communication network according to Claim 20, wherein said initiating mobile node confirms selection of the selected semi-permanent time slot to said receiving mobile node.

22. (Original) A wireless communication network according to Claim 13, wherein each mobile node further

comprises an omni-directional antenna connected to said transceiver for exchanging positional information with other neighboring mobile nodes.

23. (Original) A wireless communication network according to Claim 13, wherein said directional antenna comprises a phased array antenna.

24. (Original) A wireless communication network according to Claim 23, wherein each mobile node comprises a plurality of transceivers so that said phased array antenna simultaneously generates multiple antenna beams; and wherein said controller aims said phased array antenna to multiple neighboring mobile nodes within a scheduled semi-permanent time slot.

25. (Original) A wireless communication network according to Claim 24, wherein the multiple antenna beams are generated on different frequencies.

26. (Original) A wireless communication network according to Claim 13, wherein a plurality of communication links are established within a scheduled semi-permanent time slot, with each communication link including a different pair of neighboring mobile nodes.

27. (Original) A method for establishing communication links for a plurality of mobile nodes, each mobile node comprising a transceiver, a phased array antenna connected to the transceiver, and a controller connected to

the transceiver, the method comprising for each mobile node:

scheduling a respective semi-permanent time slot for each time frame to establish a communication link with a neighboring mobile node and leaving at least one available time slot in each time frame;

scheduling the at least one available time slot to also serve the communication link with a neighboring mobile node based upon link communications demand; and

aiming the phased array antenna toward each neighboring mobile node during communication therewith.

28. (Original) A method according to Claim 27, wherein each time frame has up to N semi-permanent time slots and at least 2N-1 available time slots.

29. (Original) A method according to Claim 27, wherein each node prioritizes the communication links and drops one of the communication links based upon the prioritization for making available a semi-permanent time slot for establishing a communication link with a new neighboring mobile node.

30. (Original) A method according to Claim 27, wherein each node prioritizes the communication links and schedules the at least one available time slot based upon the prioritization.

31. (Original) A method according to Claim 27, further comprising scheduling one of the semi-permanent time slots as an available time slot if a number of the

communication links is less than N.

32. (Original) A method according to Claim 31, further comprising rescheduling the demand assigned time slot back to a semi-permanent time slot if the number of the communication links is to be equal to N.

33. (Original) A method according to Claim 27, wherein each communication link is formed by an initiating mobile node and a receiving mobile node, and wherein the initiating mobile node transmits a list of available semi-permanent time slots to the receiving mobile node.

34. (Original) A method according to Claim 33, wherein the receiving mobile node transmits selection of one of the semi-permanent time slots to the initiating mobile node.

35. (Original) A method according to Claim 34, wherein the initiating mobile node confirms selection of the selected semi-permanent time slot to the receiving mobile node.

36. (Original) A method according to Claim 27, wherein each mobile node further comprises an omni-directional antenna connected to the transceiver, the method further comprising exchanging positional information with other neighboring mobile nodes.

37. (Original) A method according to Claim 27,

wherein each mobile node comprises a plurality of transceivers so that the phased array antenna simultaneously generates multiple antenna beams; and wherein aiming comprises aiming the phased array antenna to multiple neighboring mobile nodes within a scheduled semi-permanent time slot.

38. (Original) A method according to Claim 37, wherein the multiple antenna beams are generated on different frequencies.

39. (Original) A method according to Claim 27, wherein a plurality of communication links are established within a scheduled semi-permanent time slot, with each communication link including a different pair of neighboring mobile nodes.

40. (Currently Amended) A method for establishing communication links for a plurality of mobile nodes, each mobile node comprising a transceiver, a directional antenna connected to the transceiver, and a controller connected to the transceiver, the method comprising for each mobile node:

scheduling a respective semi-permanent time slot for each time frame to establish a communication link with a neighboring mobile node, ~~node and leaving at least one available time slot in each time frame,~~ each time frame having up to N semi-permanent time slots and at least 2N-1 available time slots;

scheduling the at least one available time slot to also serve the communication link with a neighboring mobile node based upon link communications demand; and

aiming the directional antenna toward each neighboring mobile node during communication therewith.

41. (Original) A method according to Claim 40, wherein the directional antenna comprises a phased array antenna.

42. (Original) A method according to Claim 40, wherein each node prioritizes the communication links and drops one of the communication links based upon the prioritization for making available a semi-permanent time slot for establishing a communication link with a new neighboring mobile node.

43. (Original) A method according to Claim 40, wherein each node prioritizes the communication links and schedules the at least one available time slot based upon the prioritization.

44. (Original) A method according to Claim 40, further comprising scheduling one of the semi-permanent time slots as an available time slot if a number of the communication links is less than N.

45. (Original) A method according to Claim 44, further comprising rescheduling the demand assigned time slot back to a semi-permanent time slot if the number of the communication links is to be equal to N.

46. (Original) A method according to Claim 40,

wherein each communication link is formed by an initiating mobile node and a receiving mobile node, and wherein the initiating mobile node transmits a list of available semi-permanent time slots to the receiving mobile node.

47. (Original) A method according to Claim 46, wherein the receiving mobile node transmits selection of one of the semi-permanent time slots to the initiating mobile node.

48. (Original) A method according to Claim 47, wherein the initiating mobile node confirms selection of the selected semi-permanent time slot to the receiving mobile node.

49. (Original) A method according to Claim 40, wherein each mobile node further comprises an omni-directional antenna connected to the transceiver, the method further comprising exchanging positional information with other neighboring mobile nodes.

50. (Original) A method according to Claim 41, wherein each mobile node comprises a plurality of transceivers so that the phased array antenna simultaneously generates multiple antenna beams; and wherein aiming comprises aiming the phased array antenna to multiple neighboring mobile nodes within a scheduled semi-permanent time slot.

51. (Original) A method according to Claim 50, wherein the multiple antenna beams are generated on different

frequencies.

52. (Original) A method according to Claim 40, wherein a plurality of communication links are established within a scheduled semi-permanent time slot, with each communication link including a different pair of neighboring mobile nodes.